<u>8. CHOOSING MEASURES TO APPLY:</u> Describe what needs to be implemented or changed to achieve the goals of the watershed plan. Select an array of measures or alternatives to accomplish this.

- **Sedimentation from erosion on agricultural land.**

There are many types of Best Management Practices (BMP's) available for erosion control on agricultural land. Ranging from the simple, but very effective vegetative filter strip, up to engineered practices such as WASCoB's (water and sediment control basins). Practices are field –specific, not all practices are appropriate on every farm.
Practices are usually designed by USDA-NRCS personnel, under the guidance of an Agricultural Engineer, to NRCS specifications as found in the Field Office Technical Guide (FOTG).

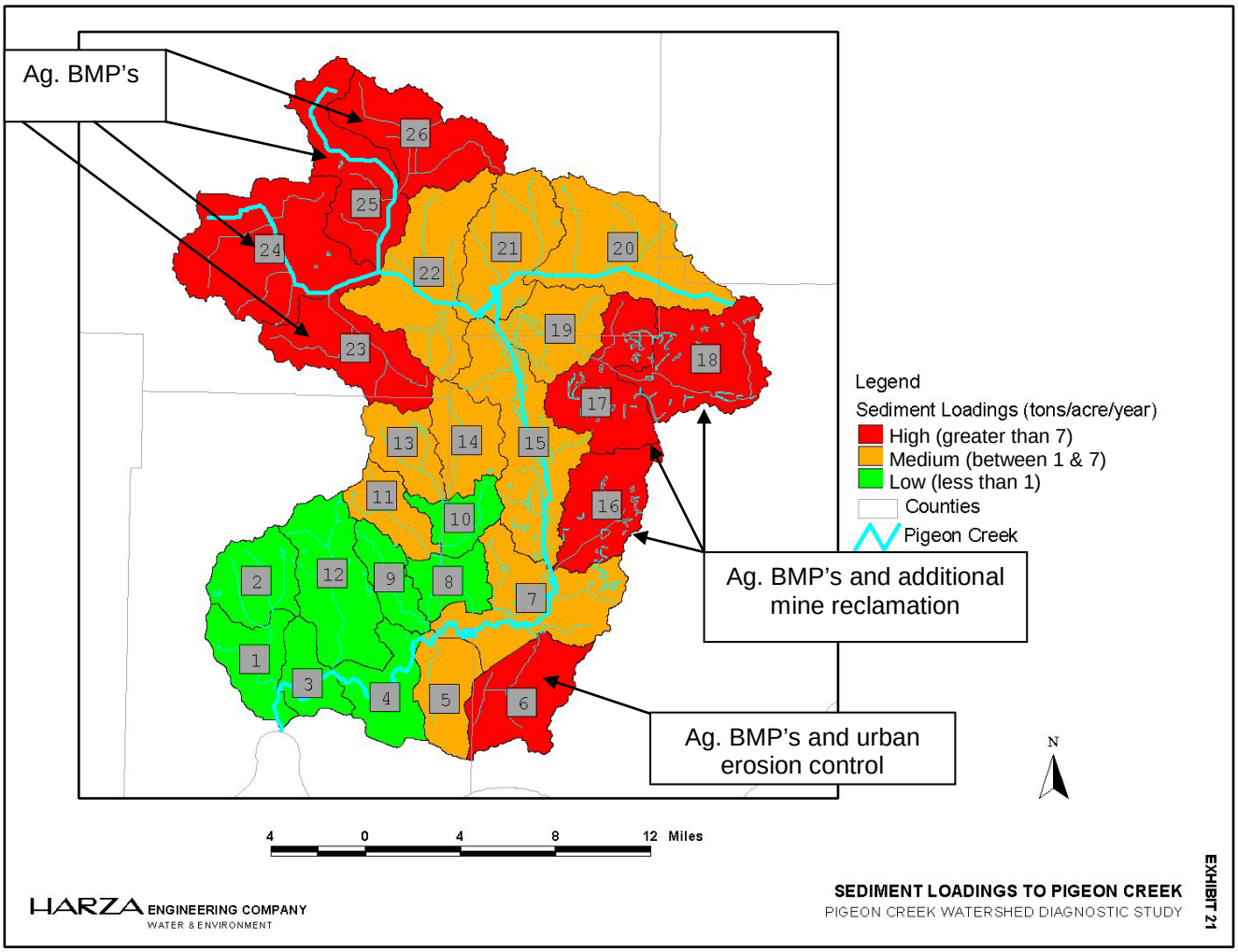
Continuous cropping systems- utilizing cover crops or corn-wheat-soybean-hay rotations- are also effective in reducing soil erosion. No-till corn planting is very effective, but adoption rates are low in Gibson County, the area of the watershed with the most highly erodable land.
For subwatersheds 23,24,25 and 26 the following BMP's are recommended: vegetative filter strips on any land adjacent to a stream to control sheet & rill erosion, grassed waterways and/or WASCoB's to control gully erosion, and cover crops or no-till systems to reduce soil loss from fallow fields. Filter strips have the added advantage of moving all chemical application away from surface water.

For subwatersheds 16,17 and 18, the same practices would be appropriate on the land that is in crop production. However, these three subwatersheds also have large areas of minimally-reclaimed strip mine land, and also active mining. In the case of the reclaimed ground, critical area planting that includes: additional tree planting, warm-season grasses, retention basins and other practices would be appropriate. Additional buffers and retention would also be appropriate on the active mine land.

Subwatershed 6 is a combination of agriculture and rapidly-urbanizing land. BMP's suggested for the other agricultural subwatersheds would be appropriate on the cropped area. For the land under development, increased attention should be paid by the regulatory authority to erosion control plans required of any project disturbing 5 acres or more. Such plans should meet guidelines found in "Indiana Handbook for Erosion Control in Developing Areas", otherwise known as "Rule 5". A local ordinance requiring a vegetative buffer between any watercourse and development would be very effective.

Technical assistance and financial incentives are available for most agricultural BMP's through USDA programs such as: Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP) and state programs such as IDNR's Lake and River Enhancement (LARE) program and IDEM's Section 319 nonpoint source program.

Figure 21


Ag. BMP's
Ag. BMP's and additional mine reclamation
Ag. BMP's and urban erosion control
Legend
Sediment Loadings (tons/acre/year)
High (greater than 7)
Medium (between 1 & 7)
Low (less than 1)
Counties
Pigeon Creek
N
4 0 4 8 12 Miles
HARZA ENGINEERING COMPANY
WATER & ENVIRONMENT
SEDIMENT LOADINGS TO PIGEON CREEK
PIGEON CREEK WATERSHED DIAGNOSTIC STUDY
EXHIBIT 21

- **Runoff from livestock operations.** Once again, NRCS is the lead agency on the planning and design of livestock and manure management practices. The Field Office Technical Guide and the National Grazing Handbook give design requirements and applications.

For the Smith Fork headwaters subwatershed (#20), manure management plans should be prepared for each of the five identified producers. These plans, developed to FOTG specifications by a Certified Crop Consultant, spell out the rate, timing and location of all manure application to the land. Manure composting facilities are another possibility for these producers, and have the advantage of reducing the volume of manure ultimately needing to be disposed of. Rotational grazing and pasture renovation would be appropriate for at least one of the beef cattle producers, where destruction of the sod leaves the soil and manure readily available for transport to the nearest stream. A remote watering system is also need at this same site, as the cattle are permitted access to the stream at the present. Technical assistance for this subwatershed is available from NRCS and IDNR Resource Specialists. Financial assistance is available through USDA's EQIP and CRP programs. (See map below)

For the MF4 reach of McFadden Creek subwatershed (#34), a manure management plan is needed for a small turkey growing and processing facility. It has been observed that the manure is being applied in the same field year after year. The resulting nutrient overload in the soil is assumed to be contributing excess nutrients to this stream reach. In addition, the waste disposal system for the processing plant is not adequate, and is contributing E. coli and nutrients directly to the stream.

The swine facility in Reach MF8 has numerous problems. A manure management plan should be developed- as well as a manure application system of some kind. This facility also requires a composter for dead animals and bedding. Terraces need to be constructed to divert runoff from entering and hydraulically overloading the manure holding basins. Two abandoned water wells need to be properly closed.

The small dairy in Reach MF9 needs a manure management plan and a retention basin for feedlot runoff (See map next page).

Technical assistance for these practices is available from NRCS and IDNR Resource Specialists. Additional guidance is available from Purdue University: http://agry.purdue.edu/mmp/ Financial assistance from IDNR's LARE program is already in place for McFadden Creek subwatershed, and working relationships between the facility owners and technical assistance providers are already being forged.

Figure 22

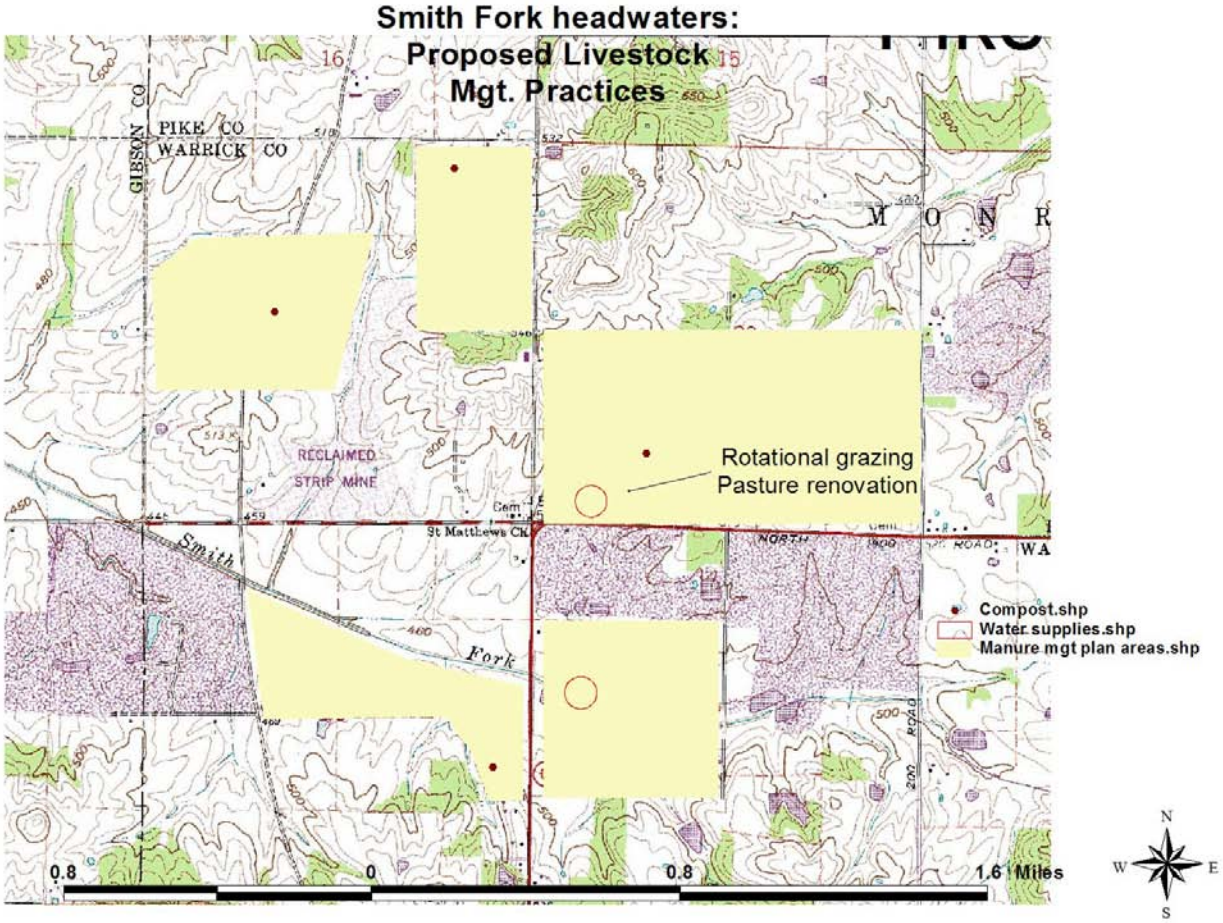
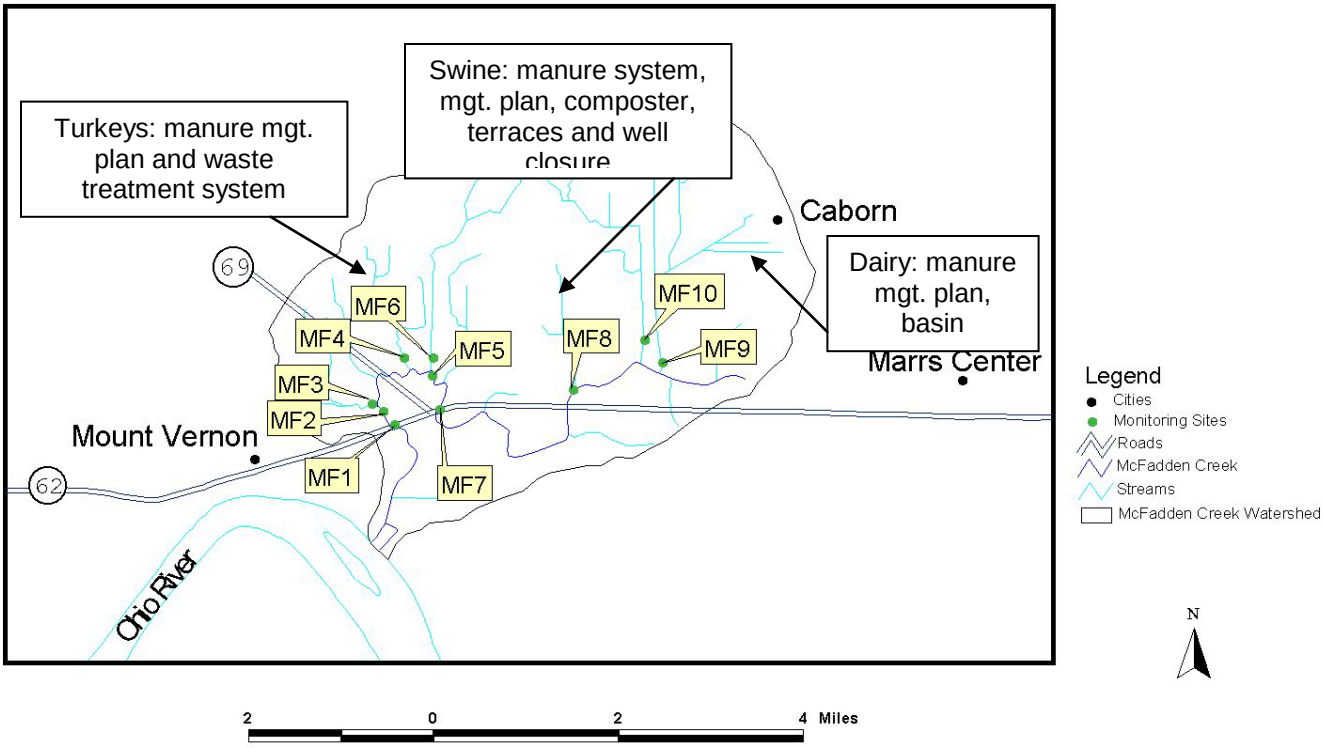

Smith Fork headwaters:
Proposed Livestock
Mgt. Practices
PIKE CO
WARRICK CO
GIBSON CO
RECLAIMED
STRIP MINE
St Matthews Ck
Smith
Fork
Rotational grazing
Pasture renovation
Compost.shp
Water supplies.shp
Manure mgt plan areas.shp
0.8
0
0.8
1.6 Miles
N
W
E
S

Figure 23: McFadden Creek: Proposed livestock mgt. practices



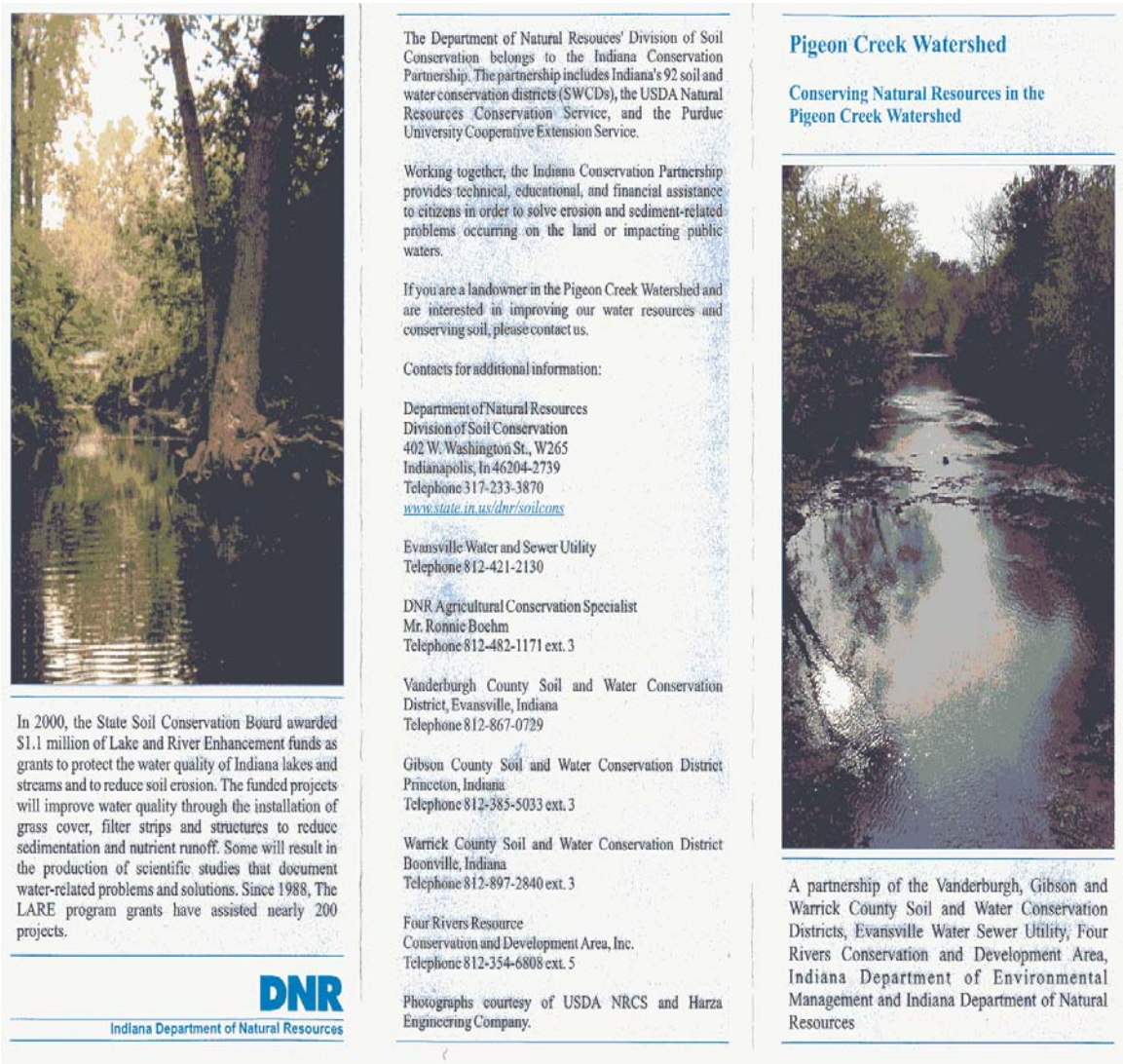
HARZA ENGINEERING COMPANY
WATER & ENVIRONMENT

SAMPLING SITES
MCFADDEN CREEK WATERSHED DIAGNOSTIC STUDY

EXHIBIT 3

Educational opportunities. A major cause of ambivalence towards watersheds has been the lack of a coordinated educational effort. During PHWSC's four years of Section 319 funding, well over a thousand students, from 4th grade to university, were exposed to watershed and water quality information. Several field days for adult citizens were also held, and programs, displays and materials were presented to agricultural stakeholders at public meetings. With the end of grant funding in June 2003, this effort will cease, leaving a definite need for more educational opportunities. The Soil & Water Conservation Districts have traditionally been the leaders at the county level for environmental education. Currently, only Gibson County has a full-time Educator on staff, and as a county employee, she is constrained from working outside the county. Educational opportunities are an integral part of the other eight goals of this plan. For the sake of future planning, we propose that the four county area seek funding from local and state government, and private partners to create the position of Watershed Education Coordinator.

Figure 24: Examples of Printed Educational Material
IDNR LARE Brochure



In 2000, the State Soil Conservation Board awarded $1.1 million of Lake and River Enhancement funds as grants to protect the water quality of Indiana lakes and streams and to reduce soil erosion. The funded projects will improve water quality through the installation of grass cover, filter strips and structures to reduce sedimentation and nutrient runoff. Some will result in the production of scientific studies that document water-related problems and solutions. Since 1988, The LARE program grants have assisted nearly 200 projects.

DNR
Indiana Department of Natural Resources

The Department of Natural Resouces' Division of Soil Conservation belongs to the Indiana Conservation Partnership. The partnership includes Indiana's 92 soil and water conservation districts (SWCDs), the USDA Natural Resources Conservation Service, and the Purdue University Cooperative Extension Service.

Working together, the Indiana Conservation Partnership provides technical, educational, and financial assistance to citizens in order to solve erosion and sediment-related problems occurring on the land or impacting public waters.

If you are a landowner in the Pigeon Creek Watershed and are interested in improving our water resources and conserving soil, please contact us.

Contacts for additional information:

Department of Natural Resources
Division of Soil Conservation
402 W. Washington St., W265
Indianapolis, In 46204-2739
Telephone 317-233-3870
www.state.in.us/dnr/soilcons

Evansville Water and Sewer Utility
Telephone 812-421-2130

DNR Agricultural Conservation Specialist
Mr. Ronnie Boehm
Telephone 812-482-1171 ext. 3

Vanderburgh County Soil and Water Conservation District, Evansville, Indiana
Telephone 812-867-0729

Gibson County Soil and Water Conservation District
Princeton, Indiana
Telephone 812-385-5033 ext. 3

Warrick County Soil and Water Conservation District
Boonville, Indiana
Telephone 812-897-2840 ext. 3

Four Rivers Resource
Conservation and Development Area, Inc.
Telephone 812-354-6808 ext. 5

Photographs courtesy of USDA NRCS and Harza Engineering Company.

Pigeon Creek Watershed

Conserving Natural Resources in the Pigeon Creek Watershed

A partnership of the Vanderburgh, Gibson and Warrick County Soil and Water Conservation Districts, Evansville Water Sewer Utility, Four Rivers Conservation and Development Area, Indiana Department of Environmental Management and Indiana Department of Natural Resources

Mission

The Pigeon-Highland Watershed Steering Committee was formed out of concern for the health of the watershed. It originated in 1999 as a 319a grant through the Indiana Dept. of Environmental Management. Administered through Four Rivers R.C.& D.,the project involves many groups and agencies, including the USDA Natural Resource Conservation Service, the Indiana Dept. of Natural Resources, Div. of Soil Conservation, and the local Soil and Water Conservation Districts. But most importantly, the project depends on landowners and communities in the watershed.

Scenic stretch of Pigeon Creek near Port Gibson.....

Goals

- Coordinate volunteer water quality monitoring efforts.
- Submit information to the media on at least a quarterly basis.
- Develop and implement a cost-share program for landowners for the installation of best management practices on their land.
- Document via photographs the condition of land before and after implementation of best management practices.
- Develop a database to identify tributaries, land use and ownership within the watershed.

Filter strip planted in cool-season grasses

Services

Amy Steeples, IDNR, working with Boonville H.S. class

GET INVOLVED!! You can do your part to improve water quality. There are many benefits to participants of the project. Farmers can help improve water quality by participating in the buffer initiative which has cost share opportunities.

Citizens can participate in water quality monitoring through the RiverWatch program

To participate, or for more information, call the Watershed Restoration Coordinator, Rick Obenshain at (812) 385-4849 ext.3

Figure 25: PHWSC Brochure

- Another function of the Watershed Educator may be contacting agricultural land owners and operators to encourage BMP installation. This approach has worked quite well during the four years the Watershed Coordinator position was funded through IDEM's 319 grant program.

- **Discharges of raw or inadequately treated sewage.** This problem presents challenges on many levels- funding being the major obstacle. The city of Evansville has completed a Long Term Control Plan (LTCP) for the combined sewer overflows (CSO's) and is making headway on the construction of a new north-side treatment plant (see Appendix C for more info). The plant alone is projected to cost $53,000,000, but is vital to meet the rapid growth of the north-side. One interesting fact about the new plant is that while it will significantly reduce CSO volume to Pigeon Creek, the plant will discharge treated effluent to Pigeon Creek. All told, Evansville will spend over $130,000,000 to eliminate or control CSO discharges to Pigeon Creek and the Ohio River.
- The Fort Branch wastewater treatment plant (WWTP) is in dire need of expansion and upgrade. It is the only remaining small WWTP in the watershed that has NOT been recently upgraded. As was mentioned in ITEM's 4 and 5 of this plan, local government has been discussing this problem for years, and action is long overdue. Given Ft. Branch's proximity to the Toyota Motor Manufacturing Plant and its' satellite industries, it is critical that this WWTP becomes capable of handling the ever-increasing flows associated with rapid growth in the US41 corridor. Several county councilmen and commissioners are pressing for action at the present time.
- Outside of the communities served by WWTP's, individual septic systems are the method of wastewater treatment. While many septic systems in the watershed may function adequately, enough systems have been observed contaminating land and water to warrant surveys or preliminary engineering reports (PER) in all four counties of the Highland-Pigeon watershed. The impetus for this first step has to originate with the county commissioners and council. Gibson County Commissioners recently applied to IDEM for Section 205j funds to conduct a PER, but unfortunately, funding was denied. Gibson and the other three counties of the watershed need to keep pursuing means to make these PER's a reality. While the costs associated with repairing or retrofitting septic systems may be prohibitively expensive for individual property owners, funding mechanisms exist that subsidize costs, thereby reducing the owner's expense.

Figure 26: Discharge from failed septic system, Gibson Co., IN

High phosphorous levels. There are many types of Best Management Practices (BMP's) available for erosion control on agricultural land. Ranging from the simple, but very effective vegetative filter strip, up to engineered practices such as WASCoB's (water and sediment control basins). Practices are field –specific, not all practices are appropriate on every farm.

These same practices also are effective in reducing phosphorous mobilization and runoff, because phosphorous is usually found attached to soil particles. This fact is somewhat validated by the data- showing that some of the subwatersheds with highest soil loss rates also demonstrate the highest phosphorous loadings. In addition, BMP's to reduce erosion and phosphorous loading also can reduce nitrate concentrations in water leaving agricultural fields.

Practices are usually designed by USDA-NRCS personnel, under the guidance of an Agricultural Engineer, to NRCS specifications as found in the Field Office Technical Guide (FOTG).

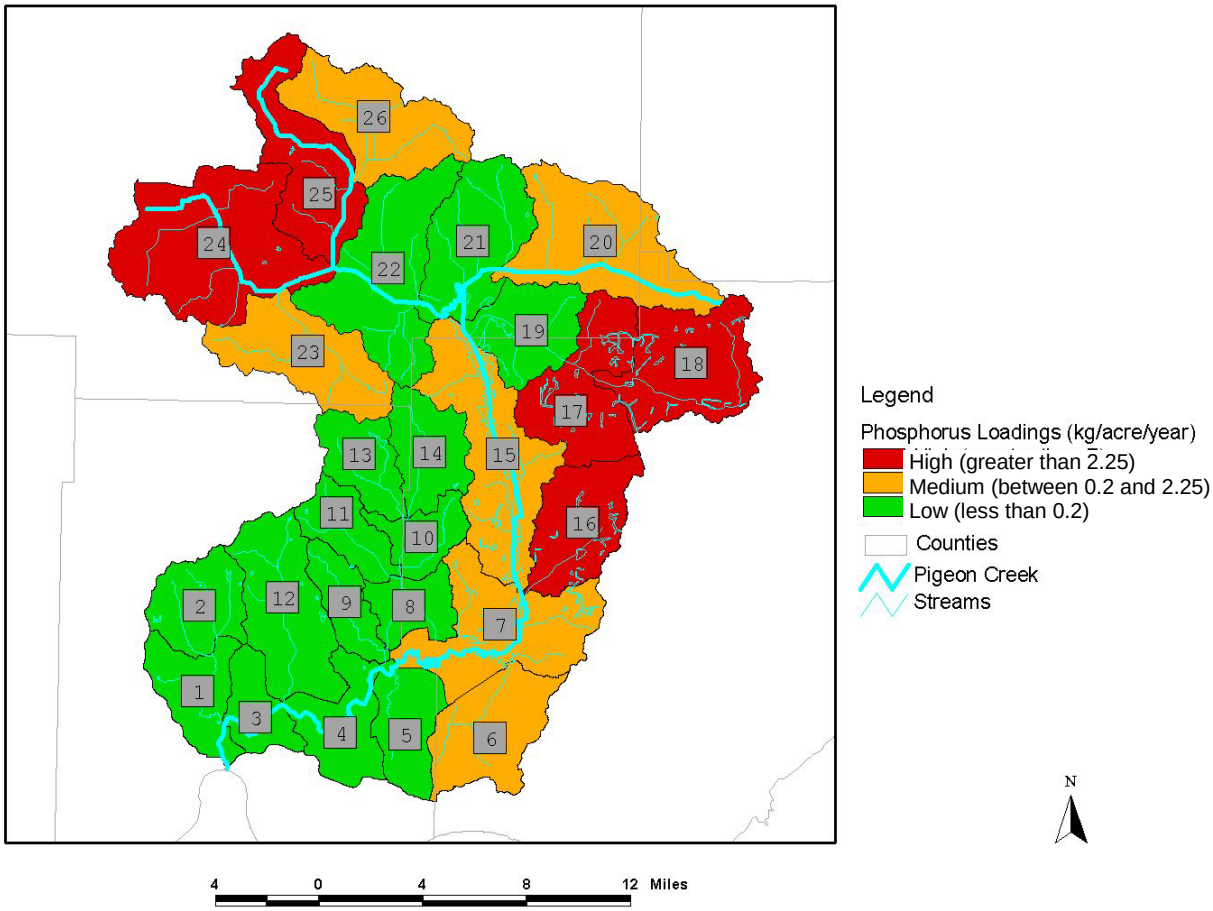
Continuous cropping systems- utilizing cover crops or corn-wheat-soybean-hay rotations- are also effective in reducing phosphorous loading to the stream. No-till corn planting is very effective, but adoption rates are low in Gibson County, the area of the watershed with the most highly erodable land.

For subwatersheds 24 and 25, the following BMP's are recommended: vegetative filter strips on any land adjacent to a stream to control sheet & rill erosion, grassed waterways and/or WASCoB's to control gully erosion, and cover crops or no-till systems to reduce soil- and nutrient-loss from fallow fields. Filter strips have the added advantage of moving all chemical and fertilizer application away from surface water. In addition, a Nutrient Management Plan, prepared by a Certified Crop Consultant, should be executed on every farm in the watershed.

For subwatersheds 16,17 and 18, the same practices would be appropriate on the land that is in crop production. However, these three subwatersheds also have large areas of minimally-reclaimed strip mine land, and also active mining. In the case of the reclaimed ground, additional tree planting, warm-season grasses, retention basins and other practices would be appropriate. Additional buffers and retention would also be appropriate on the active mine land.

Technical assistance and financial incentives are available for most agricultural BMP's through USDA programs such as: Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP) and state programs such as IDNR's Lake and River Enhancement (LARE) program and IDEM's Section 319 nonpoint source program.

Figure 27



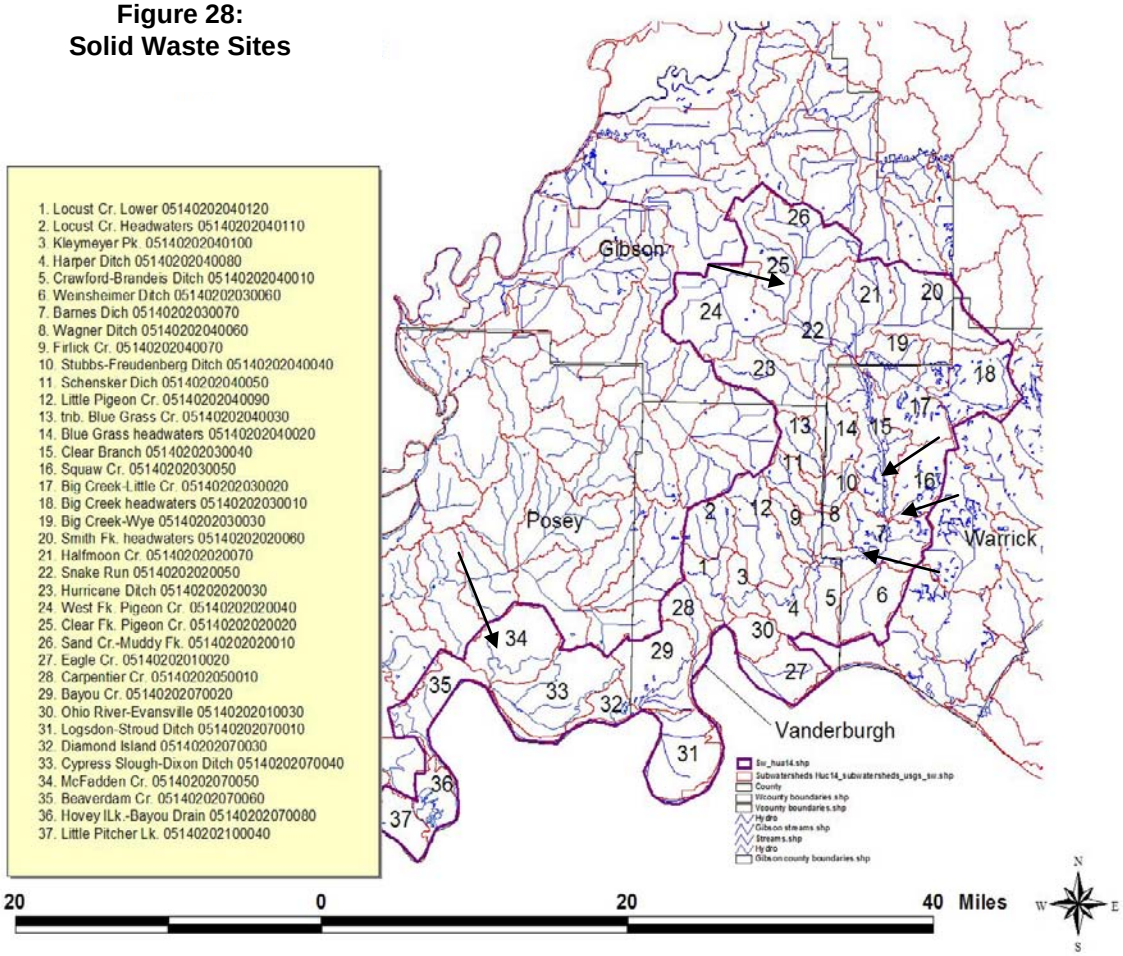
HARZA ENGINEERING COMPANY
WATER & ENVIRONMENT

PHOSPHORUS LOADINGS TO PIGEON CREEK
PIGEON CREEK WATERSHED DIAGNOSTIC STUDY

EXHIBIT 22

Illegal solid waste disposal. "Dumping attracts dumping"- the saying is sad but true. The measure we want to apply to this issue is multi-fold: to begin with, we want to form a partnership of citizens, SWCD, Solid Waste Management District(SWMD), business and industry, county government and others to physically remove and properly dispose of the solid waste dumps in subwatersheds 7,15,16,25 and Reach MF2. As both prelude to and follow-up, news releases and field days will be provided as part of the Educational Opportunities component of this watershed management plan. Funding will be furnished by the partnership through cash, budget line items and in-kind donations. Another parameter of this measure is to restore the riparian vegetation- either destroyed in the process of the cleanup, or removed sometime in the past. The final on-site measure will be the posting of signs describing the cleanup, the partnership, and a reminder to the public of the legal penalties for illegal dumping. All counties in the watershed have SWMD districts that subsidize the cost of citizens' solid waste disposal. It is disheartening that no matter how inexpensive or convenient waste disposal is made, some people still dispose of their unwanted items in an illegal and irresponsible manner. Because of this fact of society, it is imperative that solid waste be a topic of the Educational Opportunities component.

Figure 28:
Solid Waste Sites



- **Streams impaired for Aquatic Life Use Support (ALUS).**

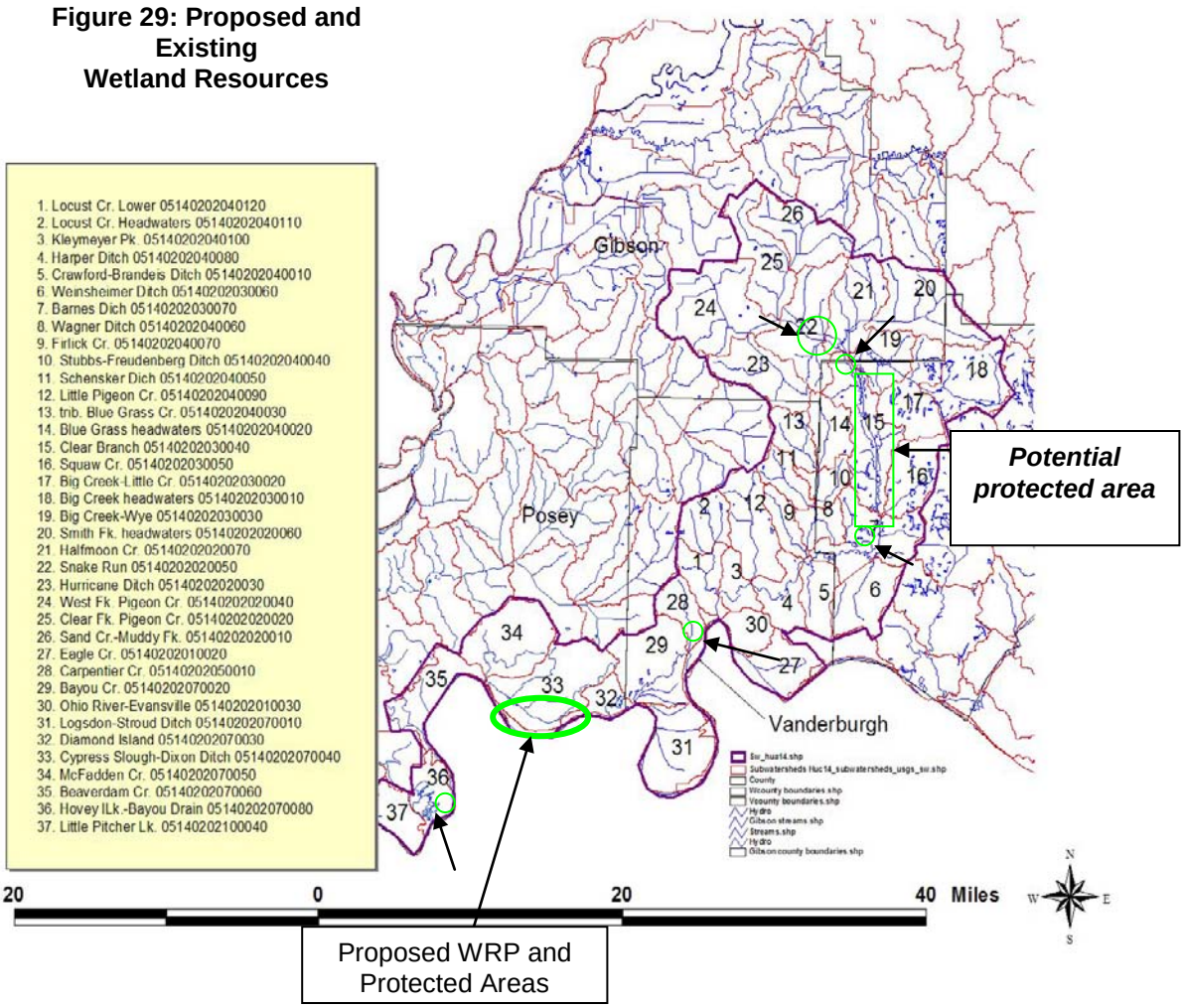
Subwatersheds 23,24,25,26 and McFadden stream reaches MF8,MF9,MF10 will be evaluated for riparian restoration, or at the minimum, filter strips. USDA-NRCS has specifications and planting guidelines for this best management practice, and technical assistance will be provided by SWCD staff, IDNR Resource Specialists and NRCS. Financial incentives are available for this practice through USDA's Conservation Reserve Program, EQIP, DNR's LARE program, and IDEM's Section 319 grants. Given the slow rate of growth for most trees, measures of success, i.e. lower water temperature, woody debris in the channel, increased macroinvertebrate diversity, may not be quantifiable for many years. Estimates of potential riparian restoration (stream miles include both banks):

Watershed 23: 10% existing cover, 22 stream miles
Watershed 24: 0% existing cover, 40 stream miles
Watershed 25: 20% existing cover, 23 stream miles
Watershed 26: 15% existing cover, 26 stream miles
Watershed 34: reaches MF8, MF9, MF10 0% existing cover, 15 stream miles

It should be noted that trees are not widely popular with most farmers, especially adjacent to crop fields. Therefore, the potential for actual riparian restoration is probably a small percentage of the stream miles noted above. Filter strips, while not as effective a riparian cover, are better than doing nothing, and in the absence of significant additional financial incentive, have a better chance of adoption by the land owner. Filter strips were identified in previous sections as a suitable BMP for sedimentation and nutrient control.

- **Only 6% of watershed consists of wetlands.** Currently, the natural wetland areas of the watershed are limited to the stream corridor of Pigeon Creek through parts of Gibson and Warrick counties. Other small areas exist in southeastern Posey County, and the Hovey Lake Fish and Wildlife Area in southwest Posey contains significant wetlands. At present, three areas of constructed and /or enhanced wetland exist- two in Warrick County, and one in Vanderburgh. Our recommendation is to work with the landowners in southeastern Posey County to protect the existing wetlands and cypress groves. In addition, we would like to see at least 100 acres of cropland that was converted from wetland restored to its natural state. NRCS' Wetland Reserve Program is an excellent way to meet this goal and has many benefits: NRCS pays for the restoration- tree planting, creation of shallow water areas, etc.; a 30-year or a permanent easement is placed on the acreage, preserving wetlands for future generations; and the landowner retains ownership of the property and is paid an assessed value for the easement.

Figure 29: Proposed and Existing Wetland Resources



- **Urban erosion control.** Urban best management practices (BMPs) are actions or methods that could be used to reduce flow rates and contaminant concentrations in urban runoff. There are essentially two types of urban BMPs: source controls and treatment controls. Source controls are practices that prevent pollution by reducing the amount of pollutants at their source from entering the runoff. Treatment controls refer to devices that remove pollutants from the runoff.

Source controls are pollution prevention programs that target contaminants at their source. Since BMP technology is still imperfect, a good urban BMP program will require certain source controls be implemented in addition to the existing development. Some of the more appropriate and effective source control BMPs are described below.

Public education is a practice intended to educate the general public the proper way of using, storing, and disposal of a variety of hazardous household products that will enter stormwater. The public must become aware that many of the constituents are used in the home and that the way these products are used and disposed of can affect the stormwater quality.

The promotion of good housekeeping practices by municipal employees, the general public, and small businesses can be another effective source control BMP. Good housekeeping practices include storing hazardous products securely, safely, and in original containers; reading and following product instructions; and properly disposing of products. Staffs are needed to train municipal employees and coordinate public education efforts.

Conducting street sweeping on a regular basis can reduce the runoff of pollutants with storm water from street surfaces. When done regularly, street sweeping can remove 50 to 90% of street pollutants from polluting stormwater. Street cleaning program requires a significant capital and O&M budget. A sweeper can cost from $65,000 to $120,000 per machine, depending on the type. Evansville has a street sweeping program.

Catch basins must be cleaned periodically to maintain their ability to trap sediment and thereby prevent sewer blockages. Catch basin cleaning can improves both the aesthetics and the quality of the receiving water body. A catch basin that becomes a source rather than a sink for sediments is not being cleaned frequently enough. A catch basin cleaning program also requires a significant capital and O&M budget. For budgetary purposes, Southeastern Wisconsin Regional Planning Commission (1991) recommended a $8 cleaning cost per basin in communities equipped with vacuum street sweepers. Manual basin cleaning typically costs approximately $16 per basin. Institutional changes are recommended for improvements to Evansville's catch basin cleaning program.

Since vegetation can help to prevent erosion, take up nutrients, reduce the volume and rate of runoff, and increase groundwater recharge, control can help to maintain the vegetative ground cover on land. Vegetation control typically involves a combination of mechanical methods and careful application of herbicides.

Unlike source controls, treatment controls remove pollutants from the runoff. Treatment controls are most applicable in developing and redeveloping areas. To enhance the performance and longevity of treatment control BMPs, source controls should also be part of the treatment train. Without implementing source controls, the investment in the treatment control facilities will be lost. Some of the more appropriate and effective treatment control BMPs are described below.

Biofilters are vegetation filter strips designed to remove suspended solids by filtering through the vegetation and settling. Dissolved constituents may also be removed through chemical or biological mechanisms mediated by the vegetation and the soil. Some infiltration also occurs through the underlying soil cover.

Detention/retention ponds are the most effective management practices at removing pollutants through settling. Soluble nutrients and organic matter are removed through plant uptake and bacterial activity in the permanent pool of water. They also provide full control of peak discharges for large design storms.

The use of constructed wetlands to treat urban and agricultural storm water is popular. With functions similar to those of retention/detention ponds, constructed wetlands remove pollutants by impounding runoff and settle and retain suspended solids and associated pollutants. They can also be beneficial in the preservation and restoration of the natural balance between surface and ground water, and wildlife habitats. In urban surroundings, the availability of land is frequently a constraint on the applicability of this BMP. Constructed wetlands are discussed in greater detail below.

Hydrodynamic separators are structures built to remove sediments and other pollutants. Having a settling unit in the structure, sediments are efficiently separated by the flowing water. These separators are most effective in removing heavy particulates and floatables. The capital cost of these structures can range from $2,300 to $40,000 per pre-cast unit.

Street storage can be used to reduce the rate of runoff entering the sewer system. Street cross sections and storm drain inlets have to be modified so that the street surfaces can store and convey runoff during peak storm events and reduce the hydraulic loading to the combined sewer.

Source controls alone may not be sufficient to bring pollution loadings to levels where aquatic life is not stressed. Over the last two decades, interest has increased for the use of constructed wetlands for treatment of nonpoint source pollution. Constructed wetlands are designed specifically for water treatment and serve in a similar capacity as other water quality BMPs, to minimize pollution prior to its entry into streams, lakes and other receiving waters.

Among the most important treatment processes in wetlands are the purely physical processes of sedimentation. Sedimentation accounts for the relatively high removal rates for suspended solids, the particulate fraction of organic matter and sediment-bound nutrients and metals. Pathogens show good removal rates in constructed wetlands via sedimentation, natural die-off, and UV degradation. Dissolved constituents such as soluble organic matter, ammonia and orthophosphorus tend to have lower removal rates. Soluble organic matter is largely degraded aerobically by bacteria and periphyton. Ammonia is removed through microbial nitrification-denitrification, plant uptake, and volatilization. Nitrate is removed through denitrification and plant uptake. Phosphorus is removed mainly through soil sorption, plant assimilation and burial. Phosphorus removal rates are variable and, while phosphorus removal may be very high in newly constructed wetlands, phosphorus removal rates typically are lower than those of nitrogen in older, established wetlands.
General ranges of removal for various pollutants by constructed wetlands are given below.

Table 15

CONSTRUCTED WETLAND POLLUTANT REMOVAL EFFICIENCY

(Source: Schueler, 1987, Schueler *et al.* 1992)

Pollutant	Efficiency
Bacteria	High
Oil and Grease	Very high
BOD	Moderate
Trace metals (sediment-bound)	High
Sediment	High
Total Phosphorus	High
Total Nitrogen	Moderate

Development of constructed wetlands for treatment remains an emerging technology and design criteria continue to evolve. General design considerations include the requirement to reduce runoff velocities and provide opportunities for sedimentation. Generally designers attempt to maximize the hydraulic residence time and the distribution of flow over the treatment area. Constructed wetlands can be a very effective part of a BMP system. While constructed wetlands can be nearly universally applied to point and nonpoint sources in the study area, we have recommended constructed wetlands be considered for priority development in four subwatersheds: 6, 7, 8 and 9 (see map, Figure 30 last pg. this section). Costs for development of wetlands can vary with size, site topography and other factors. Wetlands are generally sized according to treatment needs for the volume and quality of inflows. Treatment wetland unit costs can range from $5,000 per acre to upwards of $25,000 per acre. Wetland construction requires permits from the US Army Corps of Engineers, the IDNR, Indiana Department of Environmental Management (IDEM) and, if the site in on a regulated drain, the approval of the County Drainage Board.
We recommend that the appropriate SWCD (or other local sponsor) actively seek the involvement of local landowners in these four subwatersheds. We recommend their involvement initially be as advisors to a LARE-sponsored engineering feasibility study for constructed wetlands in Weinsheimer Ditch, Barnes Ditch, Dennis Wagner Ditch and Firlick Creek subwatersheds. As landowner interest and understanding of wetland systems and their benefits increases, one or more could possibly serve as co-sponsor for construction of the wetland.

There are several agencies providing funding for projects which address water quality, erosion control, storm water, nonpoint source pollution, wetlands, and wildlife. Funding agencies include the branches of the United States Department of Agriculture (Natural Resources Conservation Service (NRCS) and the United States Forest Service), branches of the United States Department of Interior (Fish and Wildlife Service and the Bureau of Reclamation), United States Environmental Protection Agency, and the United States Army Corps of Engineers.

Many of these funding agencies provide money to the states, which in turn, fund such programs as IDEM's Section 319 Nonpoint Source (NPS) Program. Other programs are financed at the state level, such as the LARE Program. At the county level, Indiana's Drainage Code provides authority to Drainage Boards to finance certain types of watershed management projects. We believe that this is an underutilized source of financing of watershed management projects.

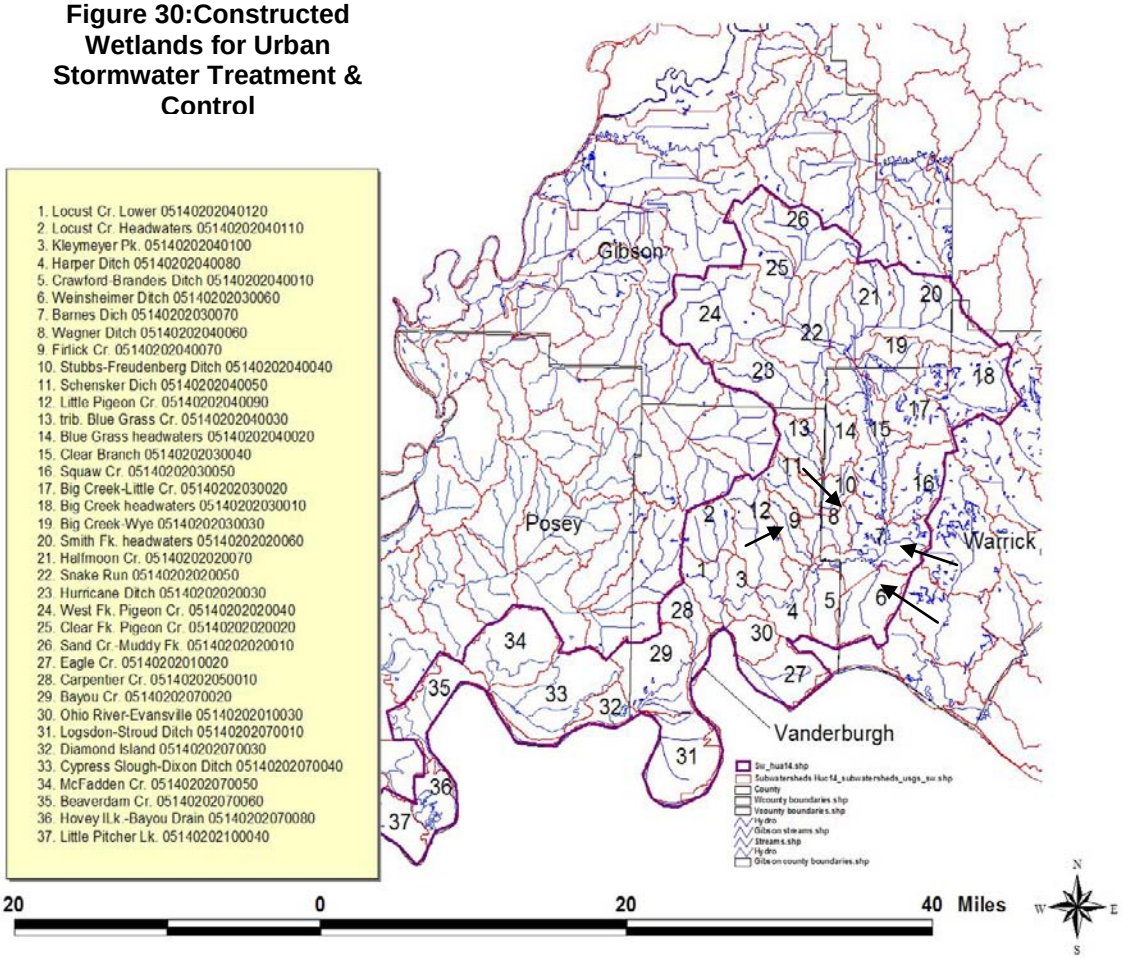



Figure 30:Constructed Wetlands for Urban Stormwater Treatment & Control